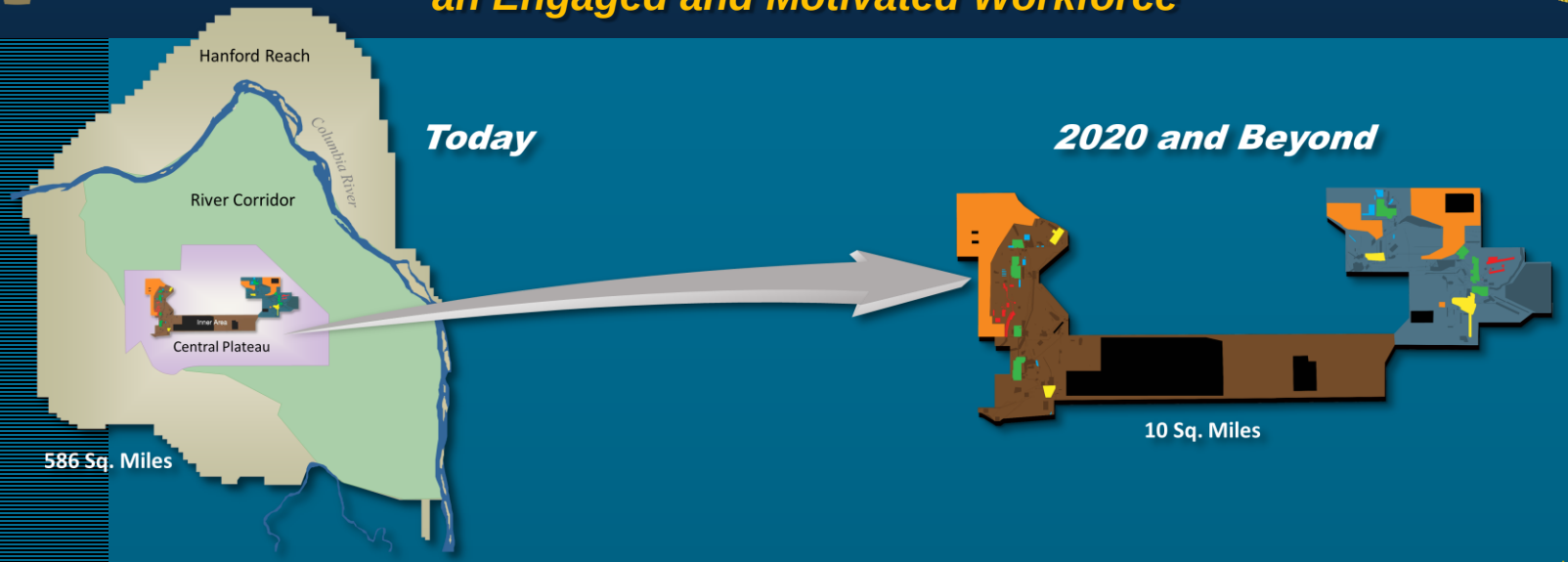
2020 Vision: Reducing Risks at the Hanford Site

Doug Shoop
Richland Operations Office

U.S. DEPARTMENT OF ENERGY

Richland Operations Office 2020 Vision

"Safe, Secure, and Compliant Mission Accomplishment by an Engaged and Motivated Workforce"



Key Accomplishments Completed by:

CY 2017

- PFP Demolished to Slab on Grade
- Manhattan Project National Park Transition Plan Completed
- Protocols for Open and Transparent Access and Use of Remediated Lands Established

CY 2018

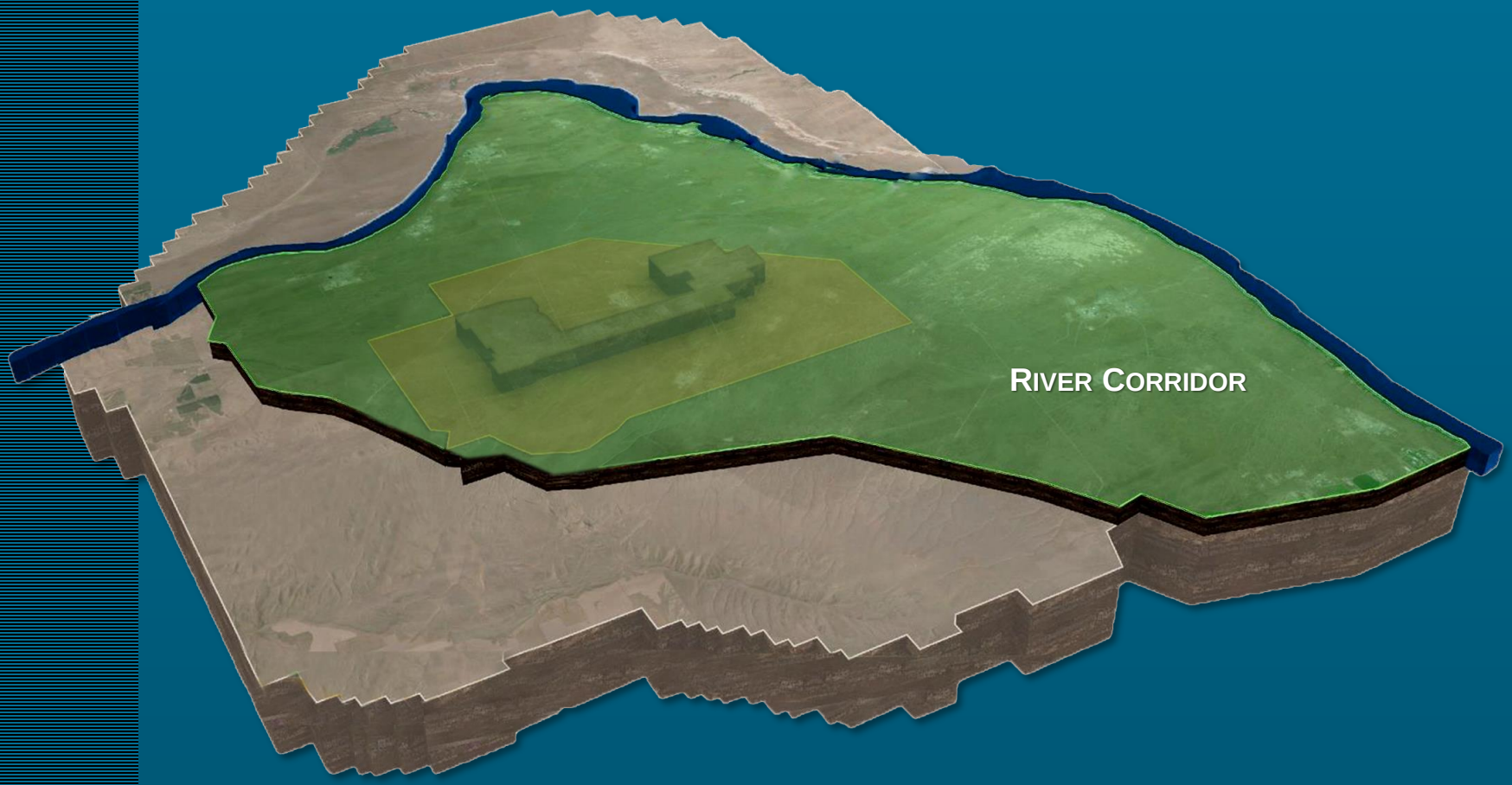
- River Corridor Orchard Lands Remedial Investigation Report Completed
- 618-10 Burial Ground and Associated Waste Sites Completed
- Initiate Characterization of the Central Plateau 200-WA-1 Operable Unit
- Manhattan Project National Park Transition Plan Implementation Initiated

CY 2019

- River Corridor Capital Asset Project Completed
- All (6) River Corridor Records of Decision Completed
- All River Corridor Remedial Actions (except 618-11 and K Area) Completed
- All River Corridor Groundwater Remedial Actions Implemented
- Remote Excavation of Waste Site under 324 Building Completed and Demolition Initiated
- K Area Sludge Removal Capital Asset Project Completed
- K Area Sludge Transferred to T Plant for Storage, Treatment, and Disposal
- Cleanup of K Reactor Area Initiated
- Cesium/Strontium Capsules Storage Area and WESF Modifications Initiated
- All Central Plateau Groundwater Records of Decision Completed and Treatment Capacity Increased to 1.3 Billion Gallons a Year
- Key Infrastructure Projects Completed and Remaining Essential Infrastructure Projects Prioritized
- Hanford Site RCRA Permit Finalized and Signed
- All Signed Tribal MOA Commitments Completed
- New Cleanup Contracts Awarded and Contract Transition Completed
- Partial Natural Resources Damage Assessment Settlements Initiated
- Collaboration, Coordination and Communications with ORP improved

Based on Funding Profile of ~$900M

River Corridor Cleanup

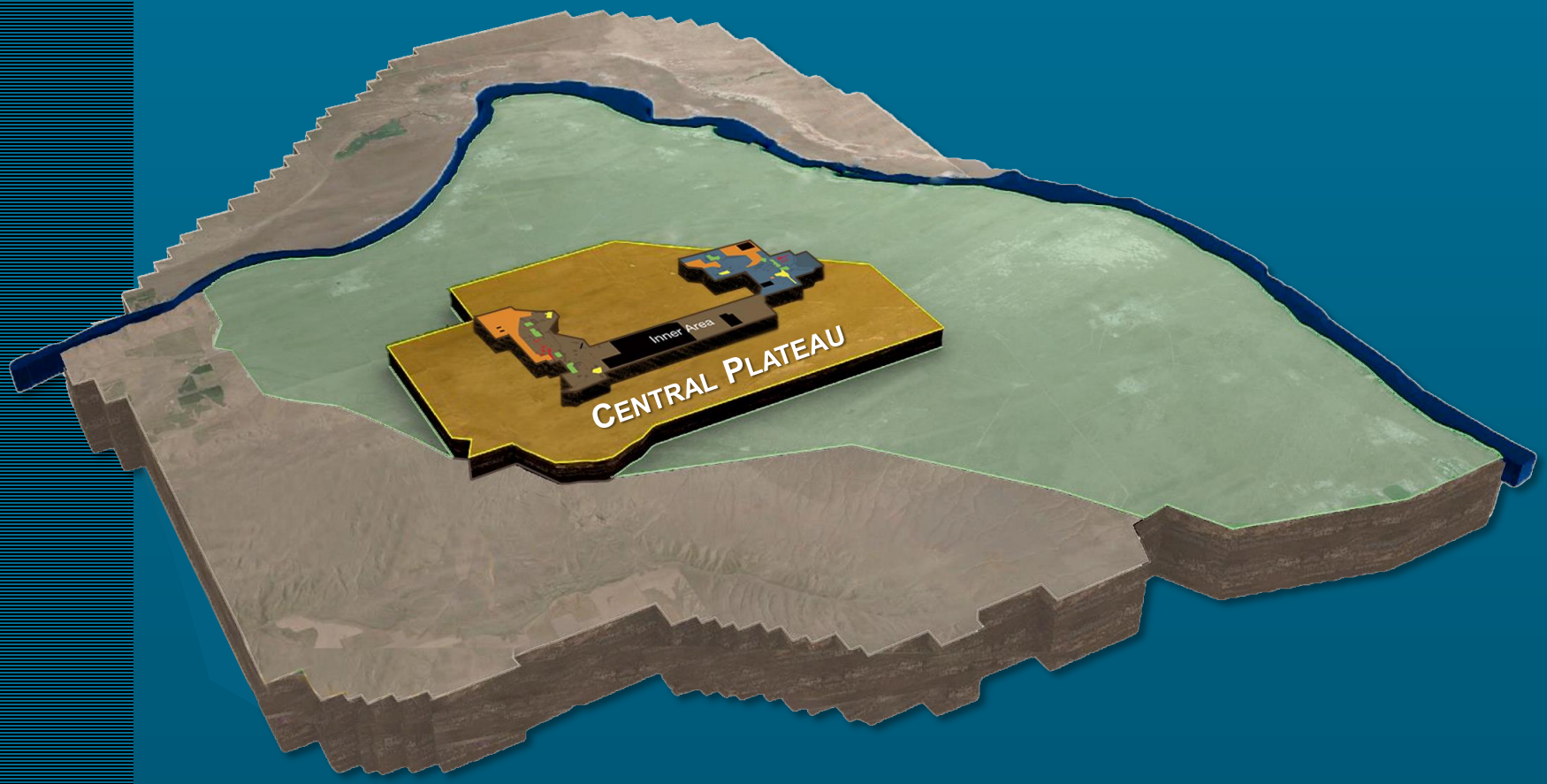


Reducing Risk: 324 Building Disposition

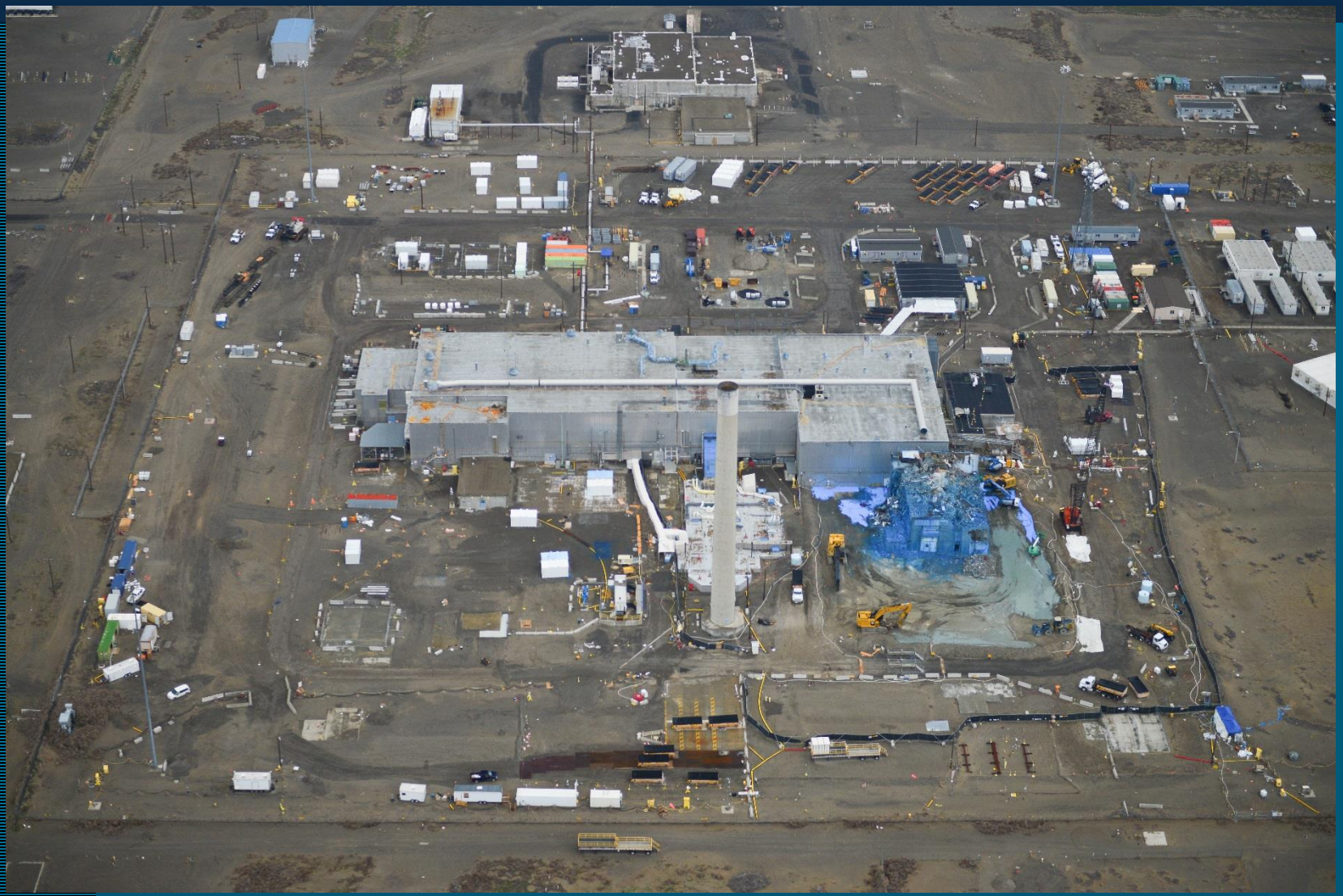
Reducing Risk:
618-10 Burial Ground Remediation

Reducing Risk: K Basin Sludge Transfer

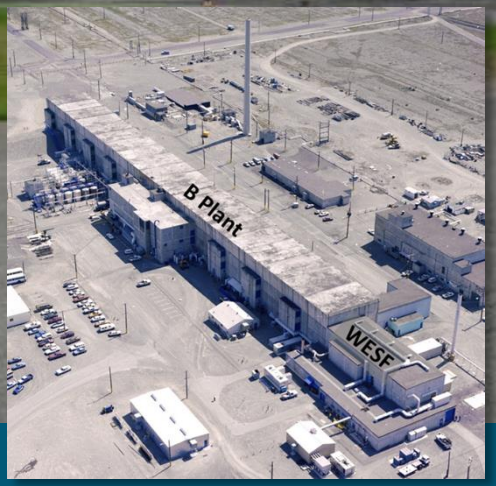
Central Plateau Cleanup



Plutonium Finishing Plant Demolition

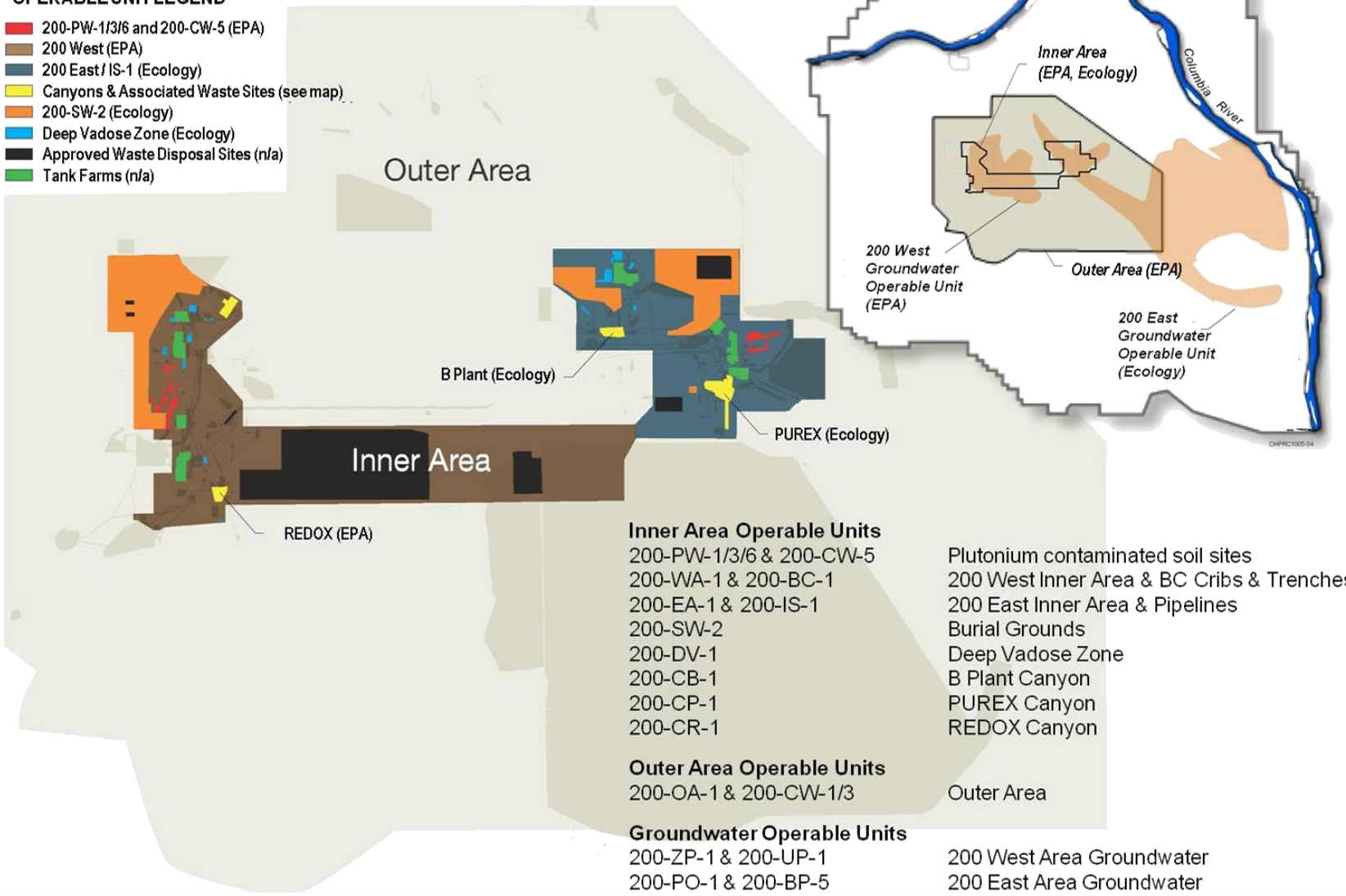


Waste Encapsulation and Storage Facility



Cesium and Strontium Capsule Transfer

INNER & OUTER AREA OPERABLE UNITS



Inner Area Operable Units

200-PW-1/3/6 & 200-CW-5	Plutonium contaminated soil sites
200-WA-1 & 200-BC-1	200 West Inner Area & BC Cribs & Trenches
200-EA-1 & 200-IS-1	200 East Inner Area & Pipelines
200-SW-2	Burial Grounds
200-DV-1	Deep Vadose Zone
200-CB-1	B Plant Canyon
200-CP-1	PUREX Canyon
200-CR-1	REDOX Canyon

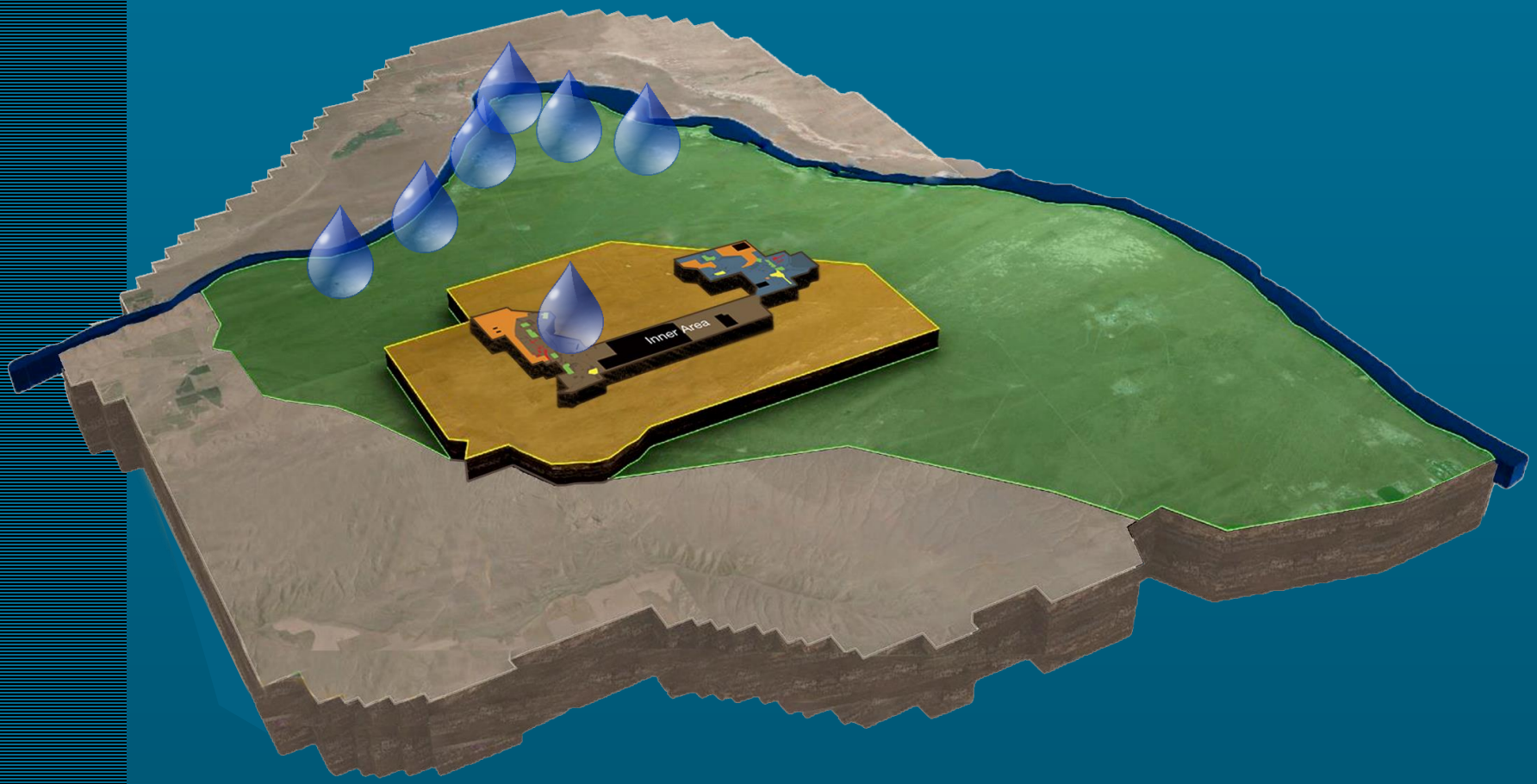
Outer Area Operable Units

200-OA-1 & 200-CW-1/3	Outer Area

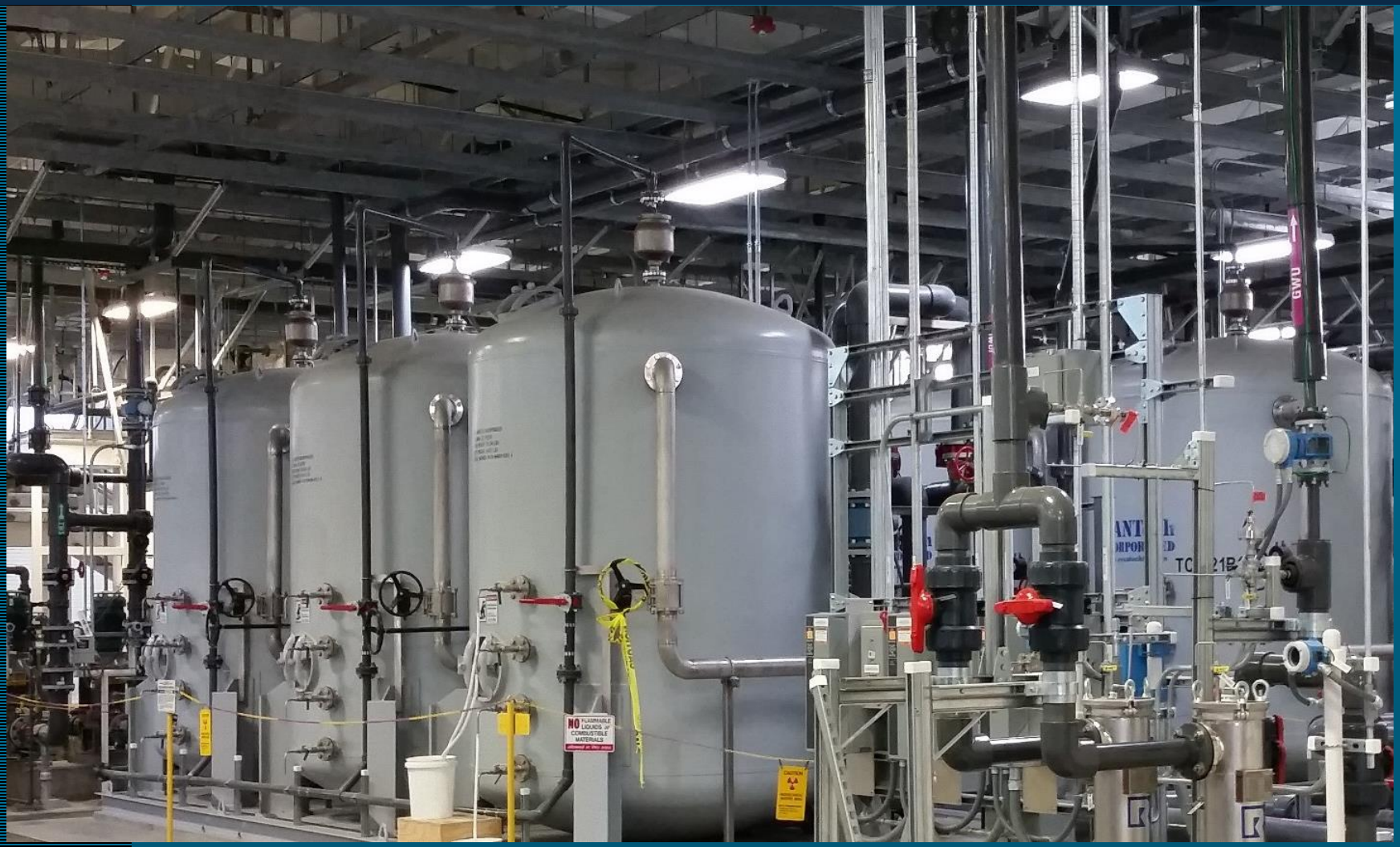
Groundwater Operable Units

200-ZP-1 & 200-UP-1	200 West Area Groundwater
200-PO-1 & 200-BP-5	200 East Area Groundwater

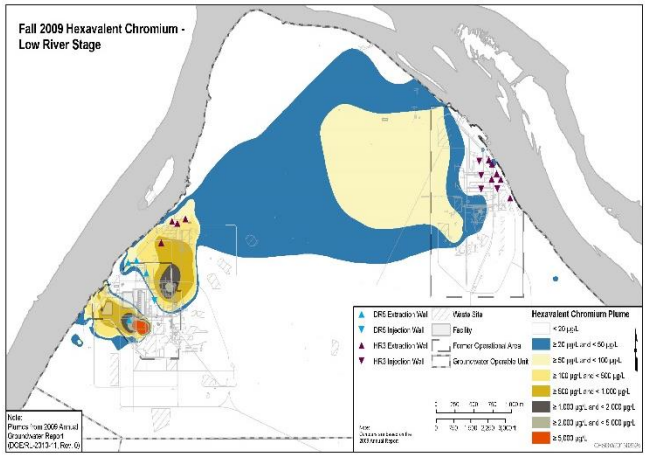
Groundwater Cleanup Expansion

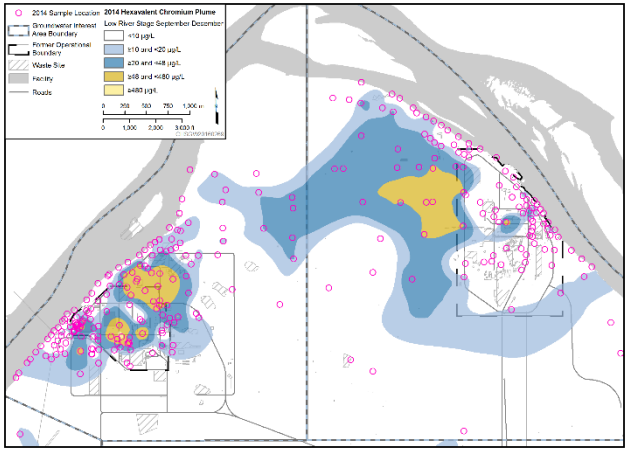


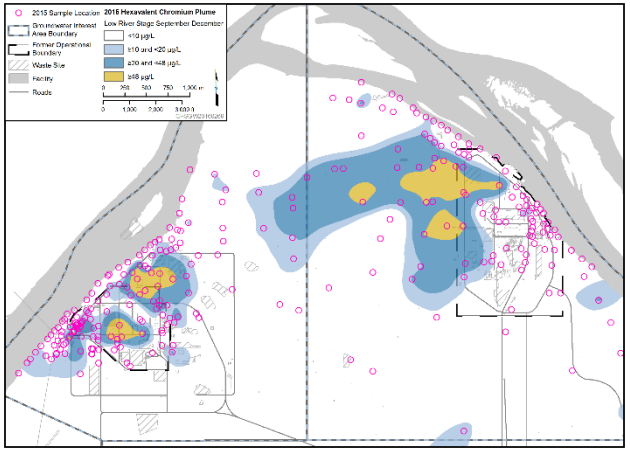
Reducing Risk:
Groundwater Treatment Technologies



Reducing Risk: Shrinking Contamination Plumes







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CLEANUP PROGRESS & CHALLENGES

OFFICE OF
RIVER PROTECTION
United States Department of Energy

Agency Overview
Hanford Live 2017

Presented by: **Ben Harp, Deputy Manager**
U.S. Department of Energy Office of River Protection

April 12, 2017

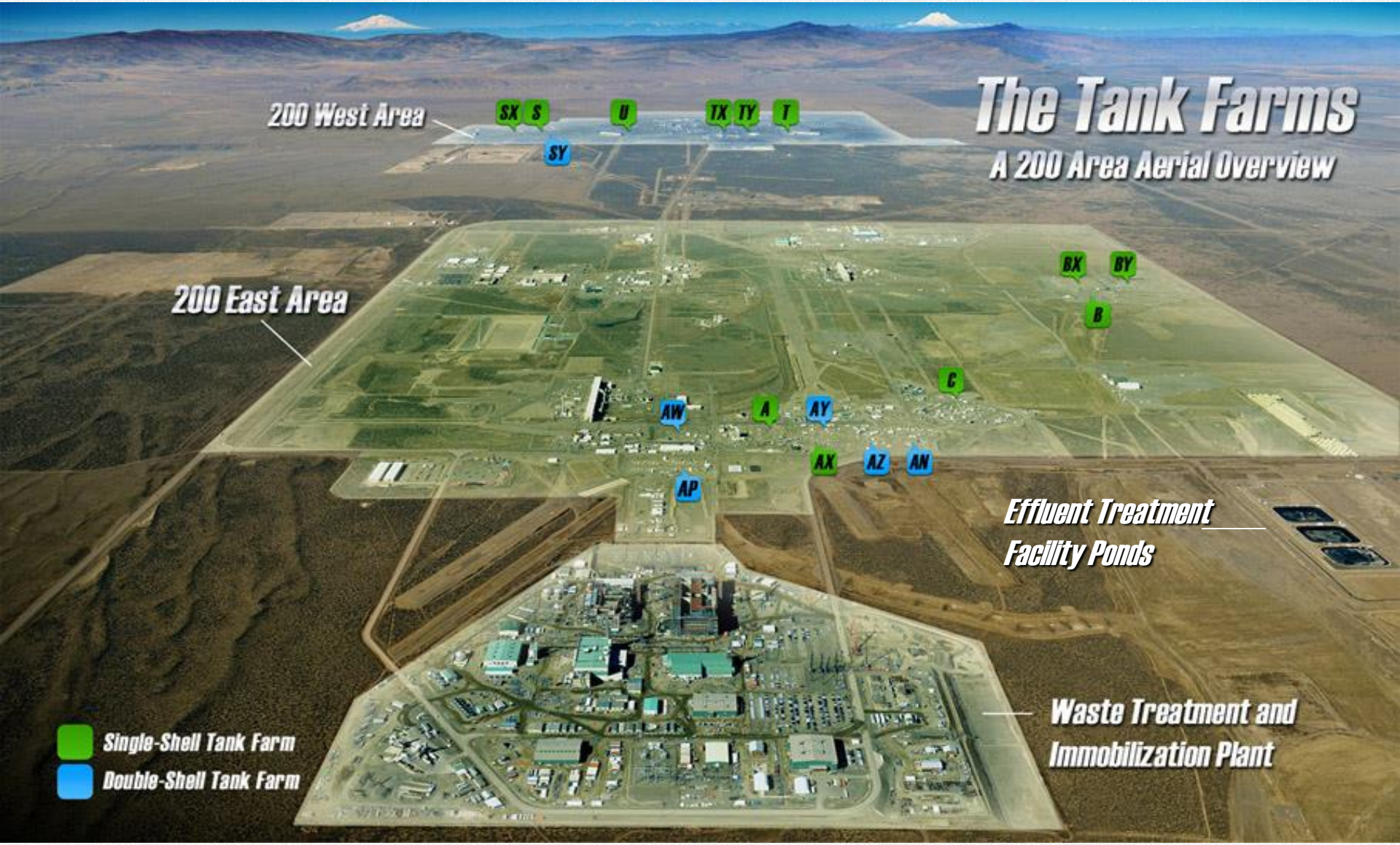
Mission

To safeguard the nuclear waste stored in Hanford's 177 underground tanks, and to manage the waste safely and responsibly until it can be treated in the Waste Treatment and Immobilization Plant for final disposition.

Vision

To be a high-performing, innovative organization that is safety-conscious and employee-focused, and committed to achieving its mission with environmental and fiscal responsibility.

River Protection Project



Tank Farms Mission

Safely maintain 56 million gallons of radioactive and chemical waste

- 1943-1964: 149 single-shell tanks (SST)
- 1968-1986: 28 double-shell tanks (DST)

What's in the Tanks

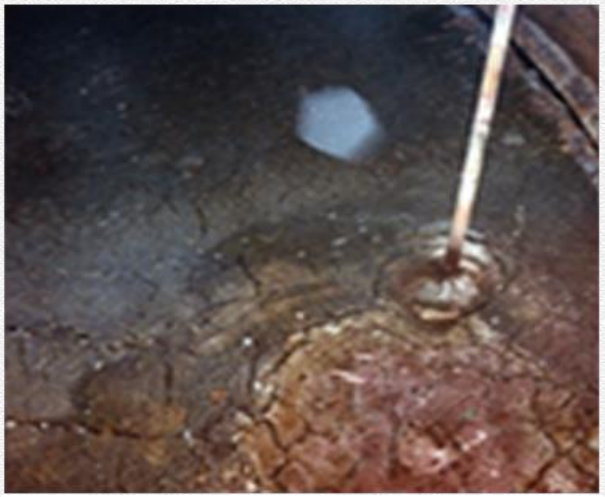
Saltcake
23M gallons

Mostly water-soluble salts; small amount of interstitial liquid

Supernate
21M gallons

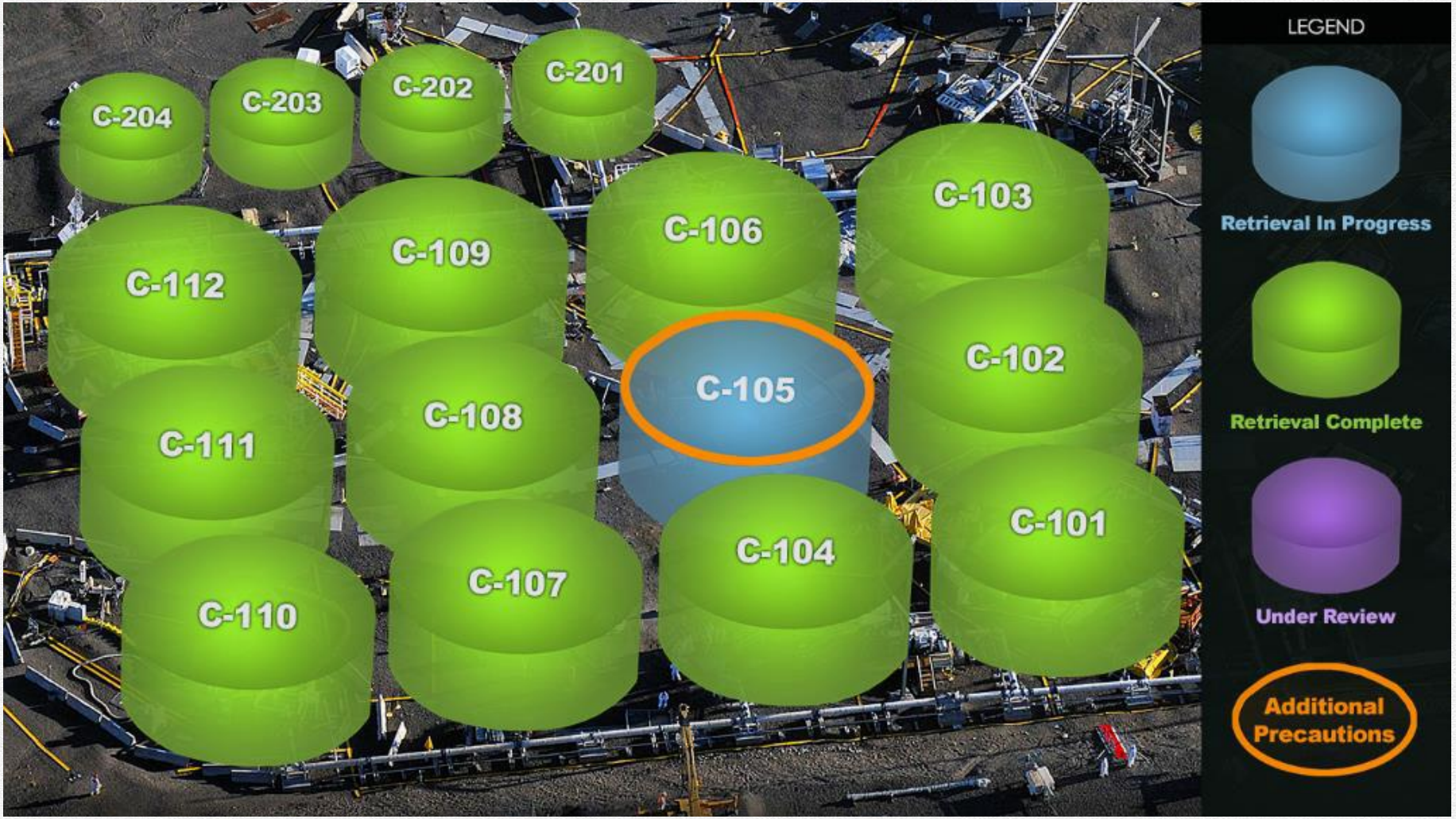
Any non-interstitial liquid in the tanks – similar to saltcake in composition

Sludge
12M gallons



Water-insoluble metal oxides, significant amount of interstitial liquid – texture similar to peanut butter

C Farm Single-Shell Tank Retrieval Progress



A-AX Single-Shell Tank Farms

Preparing for next set of tank waste retrievals

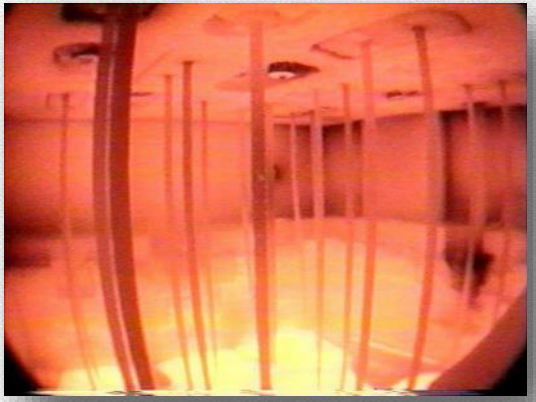
Double-Shell Tank AY-102 Retrieval

97.5% of waste removed using 2 sluicing technologies (over 725,000 total gallons)

- 587,000 gallons of supernate (liquid)
- 138,000 gallons of sludge

Provided WA state with retrieval completion report in March

Waste Treatment Plant Mission



Molten glass and waste in a melter

Simulated vitrified waste

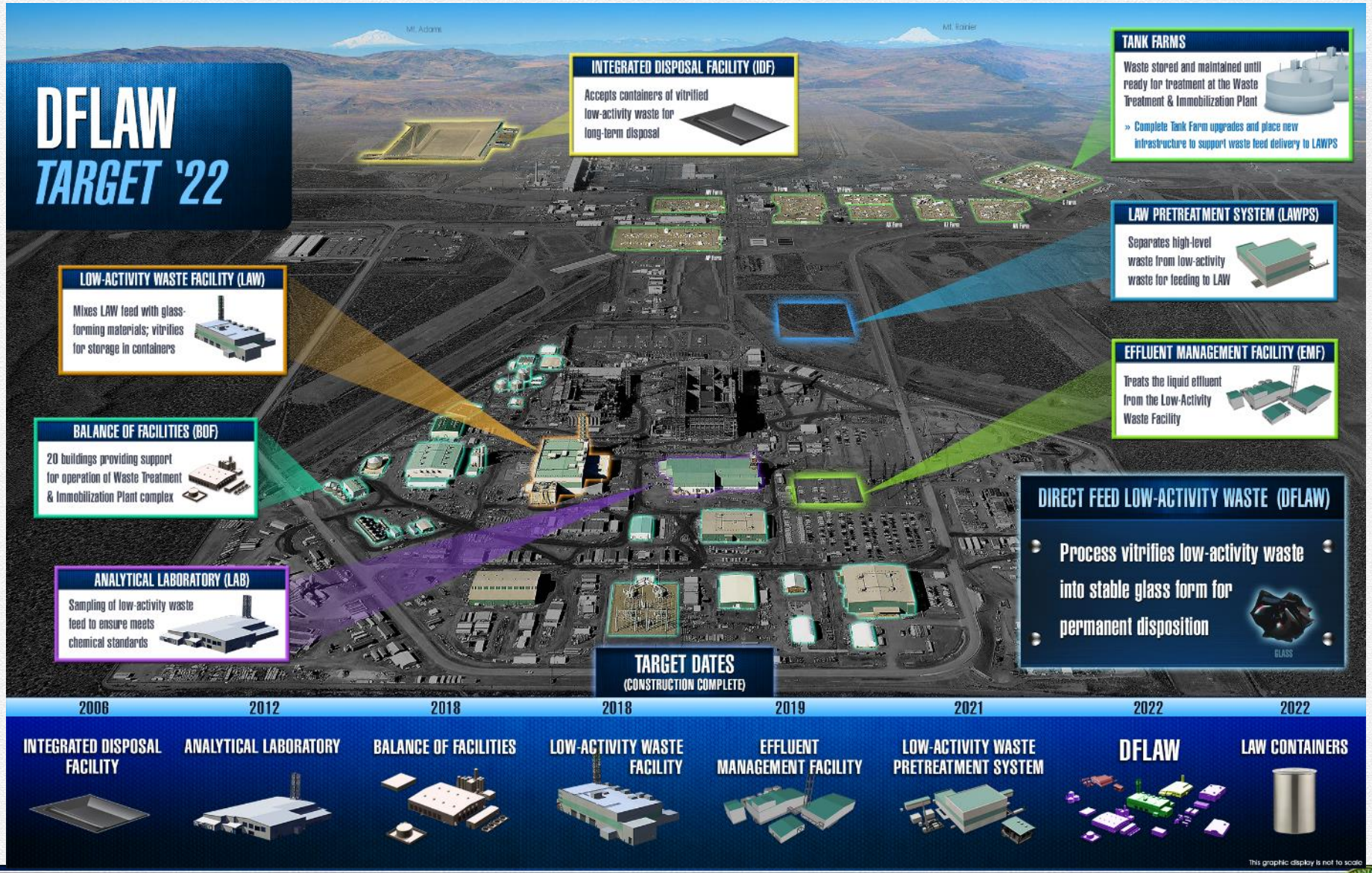
High-level waste (tall) and
low-activity waste containers

Simulated vitrified waste
in a container

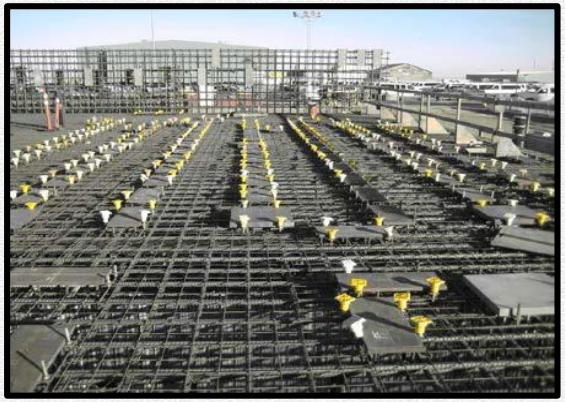
Waste Treatment Plant Overview

OFFICE OF RIVER PROTECTION
United States Department of Energy

Direct-Feed Low Activity Waste (DFLAW) Approach



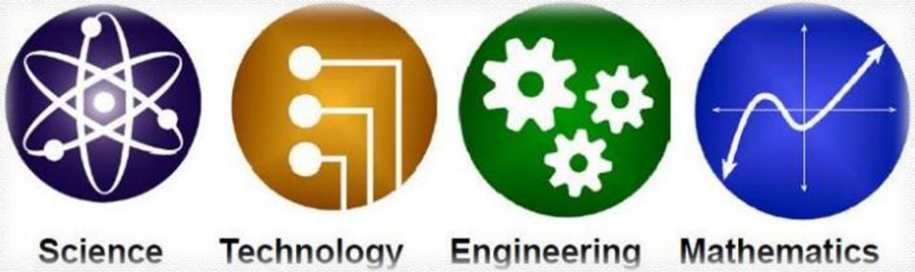
Physical Progress at WTP



Chemical Vapors Management Plan

Building Our Future Through STEM

The two grand prize winners of the Mid-Columbia Science and Engineering Fair displayed their presentations for staff at the Office of River Protection last year.



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"Solving technical challenges, protecting our workers, the public, and the environment"

The Hanford Reach
White Bluffs Overlooking the Columbia River


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CLEANUP PROGRESS & CHALLENGES

Regulating the cleanup

Alex Smith
Nuclear Waste Program Manager

Ecology's mission at Hanford

- Ensure that Hanford cleanup protects our air, land and water
- Safeguard human health now and into the future

Tri-Party Agreement

Governs how DOE, EPA and Ecology work together to clean up Hanford

- Federal Facility Agreement and Consent Order (May 15, 1989)
- Provides enforceable cleanup schedules
- Defines USDOE, EPA, and Ecology coordination to clean up Hanford

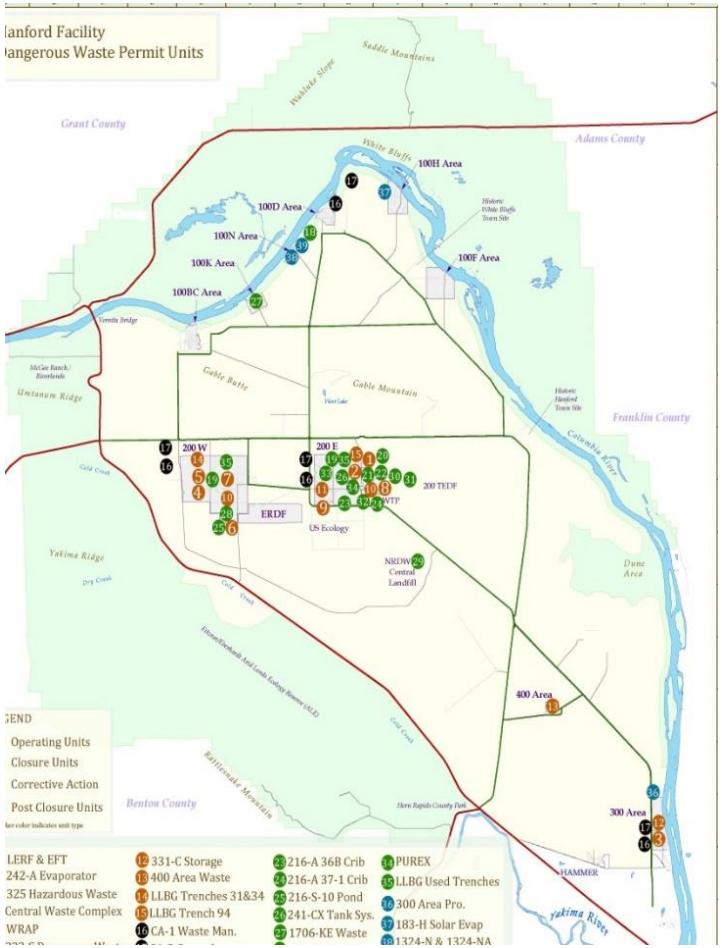
How the state implements RCRA

- Hazardous Waste Management Act
- Dangerous Waste Regulations

The Site-wide Permit

Our primary regulatory tool for radioactive and dangerous chemical waste

- Covers entire Hanford Site
- Mixed wastes (radioactive and chemically hazardous)
- 37 units for Treatment, Storage, and/or Disposal of hazardous wastes
- 2 Corrective Action units (cleanup sites)



Our current activities

- Reissuing the site-wide permit
- Permitting Direct Feed Low Activity Waste
- Completing Superfund Records of Decision

Telling the Hanford story

- Building public awareness
- Promoting science, technology, engineering and math careers to ensure a well-trained future workforce

Keep in touch

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DEPARTMENT OF
ECOLOGY
State of Washington


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Hanford Live 2017
EPA Regulatory Perspective

Dennis Faulk
Program Manager
Hanford Project Office

Scope of Cleanup

- Contaminated buildings and structures
- Spill/release sites
- Liquid disposal sites
- Solid waste burial grounds
- 56 million gallons of tank waste
- Legacy Special Nuclear Material
- Extensive groundwater contamination
- Releases to the Columbia River
- Radiological and chemical contaminants

100 Area Soil Remediation

Environmental Restoration Disposal Facility - ERDF

Issues on the Horizon

- K Basin sludge removal and treatment
- Deep vadose zone characterization and cleanup
- Vit Plant construction and operation
- Groundwater restoration
- Budget and schedule


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Hanford Advisory Board

Susan Leckband, Chair
Shelley Cimon, Vice Chair

How the HAB Works

- HAB is chartered under the Federal Advisory Committee Act (FACA)
  - One of eight citizen advisory boards for U.S. Dept. of Energy Environmental Management superfund sites)
- HAB provides policy advice and recommendations to DOE, EPA and Ecology
- HAB is a board of 32 seats representing a diversity of interests
- HAB Website: http://www.hanford.gov/page.cfm/hab

Cleanup Values

- **Safety**
  - Worker
  - Public
  - Environmental
- **Groundwater -** Protect the Columbia River
- **Tri-Party Agreement**
  - Governs cleanup schedule and actions
  - Renegotiated frequently
- **Public Involvement and Engagement**

Cleanup Values (cont'd)

- **Adequate Funding**
  - Most years not adequate to meet all cleanup goals and milestones
- **Characterization & Cleanup**
  - Go hand in hand
- **Waste Treatment Plant**
  - Remove, treat/stabilize waste from leaking tanks

Successes - Today

- **Plutonium Finishing Plant**
  - The Plutonium Finishing Plant remediation has been a priority for the HAB for more than 2 decades. Reaching “slab on grade” this calendar year is a welcome accomplishment
- **618-10 Waste Burial area**
  - Waste removal processes refined and experience may be used for other waste site actions
- **Environmental Restoration Disposal Facility**
  - Operating successfully for onsite waste disposal

Challenges – Moving Forward

- Sustained funding for cleanup
- Aggressive schedule for WTP processing Low Activity Waste (DFLAW)
- Highly radioactive plume under the 324 Building
- K Basin Sludge removal, treatment and disposal
- Cesium/Strontium Capsules
- Public involvement, education, engagement
- Ability to meet Consent Decree milestones

In Conclusion

The cleanup of the environmental damage created by past operations will continue to require billions of dollars in future funding, innovative solutions, and persistence to complete. The real challenge will be to maintain the momentum and funding to complete the cleanup efforts and provide for long-term stewardship for generations to come. Given the magnitude and longevity of the cleanup operations, it is imperative that we remain mindful to adhere to our most crucial priority, which is protection of public health and the environment, now and in the future. As a citizens' advisory board, we keep those values in mind as we advise the U.S. Department of Energy, the U.S. Environmental Protection Agency and the Washington State Department of Ecology to complete the Hanford cleanup mission in a timely, safe, and cost-effective manner.


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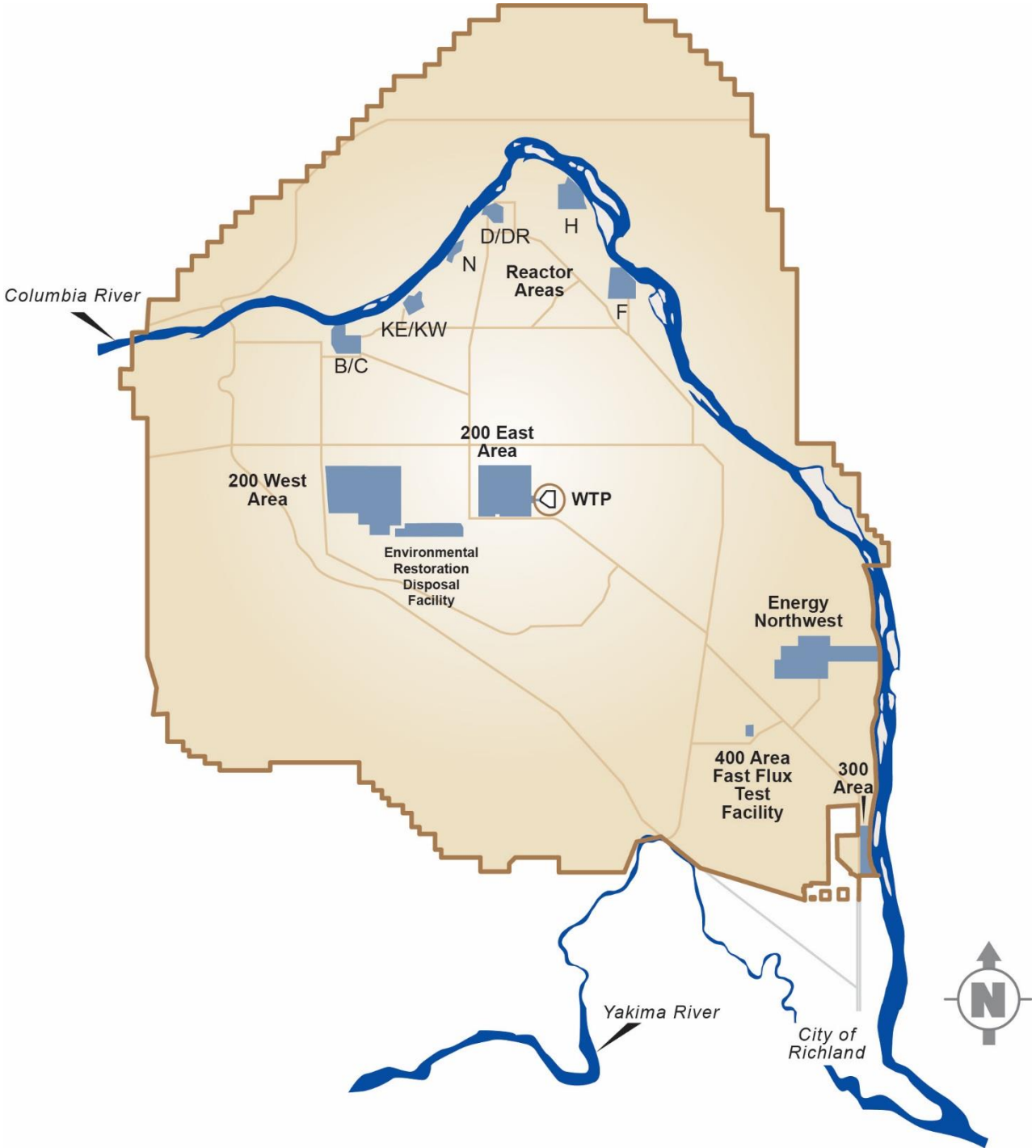
Columbia River
H
D/DR
N
Reactor Areas
F
KE/KW
B/C
200 East Area
200 West Area
WTP
Environmental Restoration Disposal Facility
Energy Northwest
400 Area Fast Flux Test Facility
300 Area
Yakima River
City of Richland
N